having deformed edge portions, such as perforation **89**, may have any desired configuration, e.g., round, square, rectangular, ellipsoid or slotted.

[**0041**] Attachment element **5** of **FIG. 6** comprises abutting portion **23** of reinforcing ribs **20**, which extends through perforation **78** of sidewall **26** and is continuous with attachment head **53**. Perforation **78** has deformed edge portions **87**, which are embedded in the plastic material extending therethrough. The deformed edge portions **87** of perforation **78** are directed outward, away from the hollow interior **17** of shell **11**.

[**0042**] In an embodiment of the present invention, the plastic material extending through the perforations and embedding the edges of the perforations, also defines a substantially plastic lined aperture in the elongated shell of the shaft support structure. The plastic lined aperture may be of any desired shape, e.g., circular, ellipsoid, square, rectangular or slotted. With reference to **FIG. 2**, apertures **59** in base **28** of shell **11** are lined with plastic material extending from reinforcing ribs **20** to open attachment heads **62**. With reference to **FIG. 4**, attachment element **6** comprises plastic reinforced ribs **20** which extend through original aperture **58** in base **28** and are continuous with open attachment head **62**. Original aperture **58** has edge portions **86** that are embedded in the plastic material extending therethrough. The plastic material extending through original aperture **58** defines plastic lined aperture **59**.

[**0043**] The process of injecting thermoplastic material, or reaction injection of thermoset plastic materials onto the interior surfaces of the elongated shell of the shaft support structure involves using the shell as a portion of the mold in which the reinforcing ribs are formed. Plastic materials that are molded onto the interior and/or onto the exterior surfaces of the elongated shell are referred to herein and in the claims as "molded on plastic materials" and similar terms.

[**0044**] With reference to **FIG. 1**, typically, a first mold portion (not shown) is inserted down into the hollow interior **17** in abutting relationship with interior surfaces **14** of shell **11**. The inserted first mold portion and interior surfaces **14** of shell **11** together define a continuous cavity into which molten thermoplastic material, is injected to form reinforcing ribs **20**, and reinforcing end plates **65** and **68**. Optionally, second mold portions (not shown) may be placed in abutting relationship with the exterior of shell **11** and over the perforations in shell **11** to form attachment heads **53**.

[**0045**] The longitudinal passage of the shaft support structure is preferably formed concurrently with the mold formation of the reinforcing ribs. With reference to **FIGS. 1, 2** and **4**, this may be achieved by further inserting third mold portions (not shown) into interior **17** through apertures **58** (depicted in **FIG. 4** and discussed previously herein) in base **28** of shell **11**. The first mold portion inserted down into interior **17**, the third mold portions inserted into interior **17** through apertures **58**, and interior surfaces **14** of shell **11** together define: (i) a continuous cavity into which plastic material, e.g., molten thermoplastic material, is injected to form reinforcing ribs **20**; and (ii) excluded cavities (into which injected plastic material does not invade) which serve to form or define longitudinal passage **41**.

[**0046**] In an embodiment of the present invention, at least a portion of the interior and/or exterior surfaces of the elongated shell of the shaft support structure are covered with a layer of molded on plastic material, e.g., a thermoset plastic material and/or a thermoplastic material, preferably a thermoplastic material, such as thermoplastic polyamide. A covering of molded on plastic material can serve to protect the elongated shell, for example, from corrosion, in the case when the shell is fabricated from metal.

[**0047**] In a further embodiment of the present invention, a portion of the exterior surface of the elongated shell of the shaft support structure is covered with exterior molded on plastic material that is continuous with the reinforcing ribs, and which serves to further fixedly attach the ribs to the shell (in addition to the molded on plastic material extending through perforations in the shell). With further reference to **FIGS. 1 and 2**, sidewalls **26** and **27** of shell **11** each have laterally outwardly extending flanges **32** and **29**, respectively. Plastic material extends over and around each of flanges **29** and **32** (as represented by attachment elements **35** and **36** in **FIGS. 1 and 2**). The plastic material of attachment elements **35** and **36** may be continuous with reinforcing ribs **20**, end plate **65** and end plate **68**, and serves to further fixedly attach reinforcing ribs **20** along with reinforcing end plates **65** and **68** to elongated shell **11**. With further reference to **FIG. 2**, attachment elements **35** and **36** wrap around flange **29** and abut the exterior of sidewall **27** by means of abutting foot portions **12** and **15**, respectively.

[**0048**] When the reinforcing ribs are fixedly attached to the shell of the shaft support structure by means of molded on plastic extending through perforations in the shell, additional attachment means may be used. Such additional optional attachment means may be selected from fasteners, adhesives, snap connections and combinations thereof (as described previously herein).

[**0049**] When the shaft support structure of the present invention includes at least one rolling bearing means, the rolling bearing means may be supported within the longitudinal passage by a plastic boss. Preferably, the plastic boss is continuous with the reinforcing ribs. The plastic boss is further preferably formed concurrently with the formation of the reinforcing ribs by molding, e.g., injection molding, of plastic material onto the interior surfaces of the shell. The plastic boss is typically in the form of a plastic tubular sleeve into which the rolling bearing means, e.g., rolling bearing means **74** of shaft support structure **2** of **FIGS. 1 and 2**, is inserted.

[**0050**] The shaft support structure of the present invention may be used to support a wide range of rotatable shafts, e.g., drive shafts, screw shafts and steering shafts. In an embodiment of the present invention, the shaft support structure is a steering column, e.g., for use in an automobile, and the shaft supported therein is a rotatable steering shaft. When used as a steering column, shaft support structure **2** of **FIGS. 1 and 2** would typically be fastened, e.g., by means of a bracket (not shown), to a support structure, e.g., a cross car beam, within the passenger compartment of an automobile (not shown). One end of shaft **47**, e.g., the end extending out from end plate **65**, would be attached to a steering wheel (not shown), and the other end, e.g., the end extending out from end plate **68**, would be attached to the steering mechanism of the front wheels of the automobile (not shown).

[**0051**] At least a portion of the shaft support structure may optionally be irreversibly longitudinally collapsible. This is